Alternative Fuels – The Seaport Perspective

Port of Los Angeles– Carter Atkins

October 15, 2014

Benefits of Our LA/Long Beach Ports

A Regional Economic Engine

L.A. CUSTOMS DISTRICT'S 2013 **Total Trade** $414.8 Billion

SAN PEDRO BAY PORTS' SHARE… $395.4 Billion

ECONOMIC IMPACTS

Employment

- 940 Los Angeles Harbor Department employees
- 10,000–15,000 Longshore and terminal jobs (LA/LB)
- Direct/indirect jobs generated by LA/LB
- 896,000 across Southern California
- 1.1 million jobs statewide
- 3.3 million jobs across the U.S.

Value of Trade to the Economy

- $63 billion throughout California (2012)
- $260 billion throughout the U.S. (2012)

State and Local Tax Revenue

- $6 billion throughout California (CY 2012)
- $23 billion throughout the U.S. (CY 2012)

What Makes The LA Region Special?

POPULATION: Mega-Region of 22 million

- 10 million in Los Angeles County
- 17.5 million five-county LA Metro Region
- 140 languages from around the world
- 97 consulates

LA Metro Region's GDP: $786.7 Billion

- Ranked 17th largest economy in the World
- Larger GDP than the countries of Saudi Arabia, Switzerland, Sweden

MANFACTURING, LABOR & INTELLECTUAL CAPITAL: Priceless

- #1 Manufacturing Capital of the US
- 14,000-strong longshore workforce
- 3 World-class research institutions
  - UCLA, USC, CalTech
  - Most PhD's in the US
  - Most patents in the US

RESOURCES: Substantial

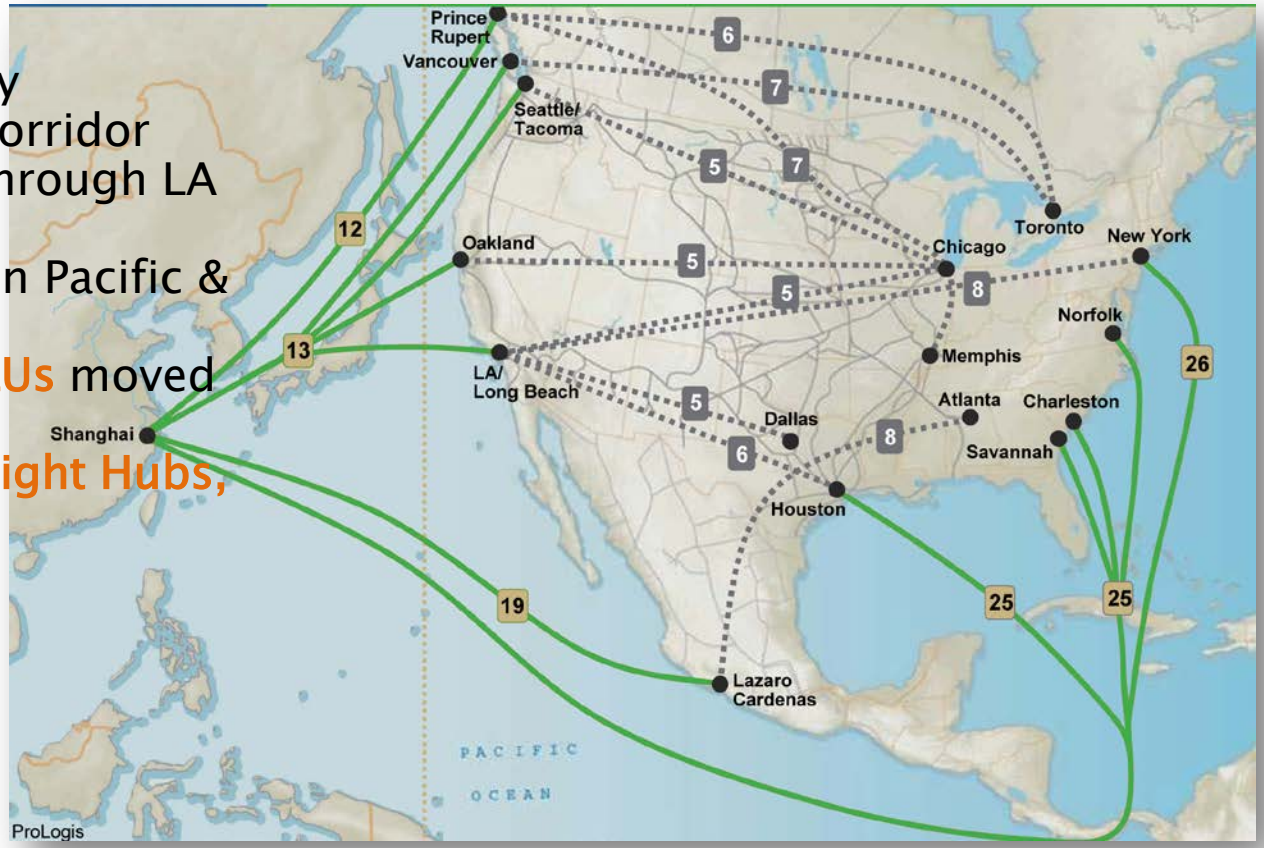
- 1.2 billion sq-ft of warehouse/distribution space w/in 80 miles
- Nation's Largest Clean Truck Fleet
- Unparalleled rail connectivity
- Busiest origin/destination airport (LAX)
  - $4.1 billion investment in infrastructure

Gateway of Connectivity

SPEED – FREQUENCY – RELIABILITY

Superior Access to US Markets

- No weather delays
- Plenty of cargo capacity
- $2.4 Billion Alameda Corridor
- Over 100 trains daily through LA basin
- 2 Class 1 Carriers:Union Pacific & BNSF
- In 2012, 5.1 million TEUs moved by rail
- Access to 14 Major Freight Hubs, including:
  - ✓ Chicago
  - ✓ Atlanta
  - ✓ Memphis
  - ✓ Houston
  - ✓ San Antonio
  - ✓ Denver
  - ✓ Omaha
  - ✓ Kansas City
  - ✓ Dallas
  - ✓ St. Louis



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What Are Our Challenges?

Port Competition

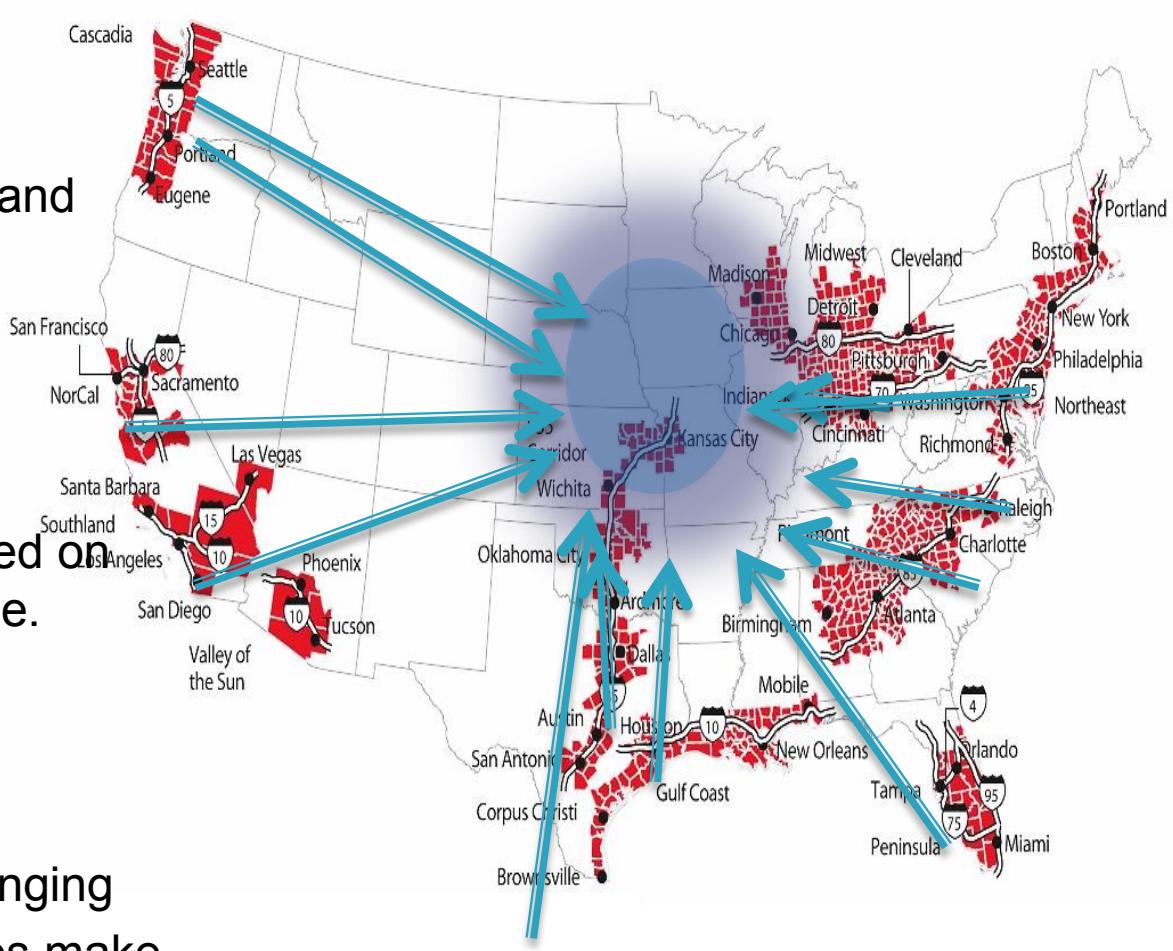
- Other West Coast Ports
- East/Gulf Coast Ports with inland connections
- Canadian Ports
- Mexican Ports

Costs

- Remain cost-competitive based on shipment time and cargo value.
- Energy costs will become increasingly more important

Shipping Line Growth

- Traditional liner growth is changing
- Alliances among shipping lines make cargo shifts more common



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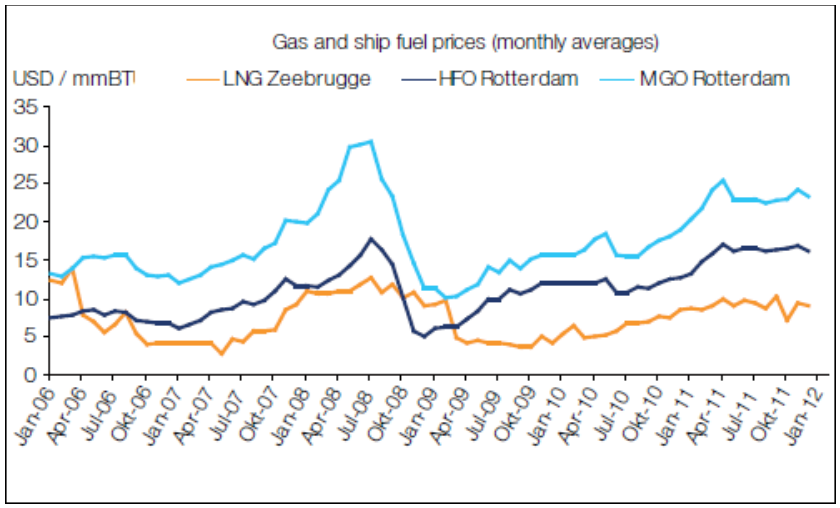
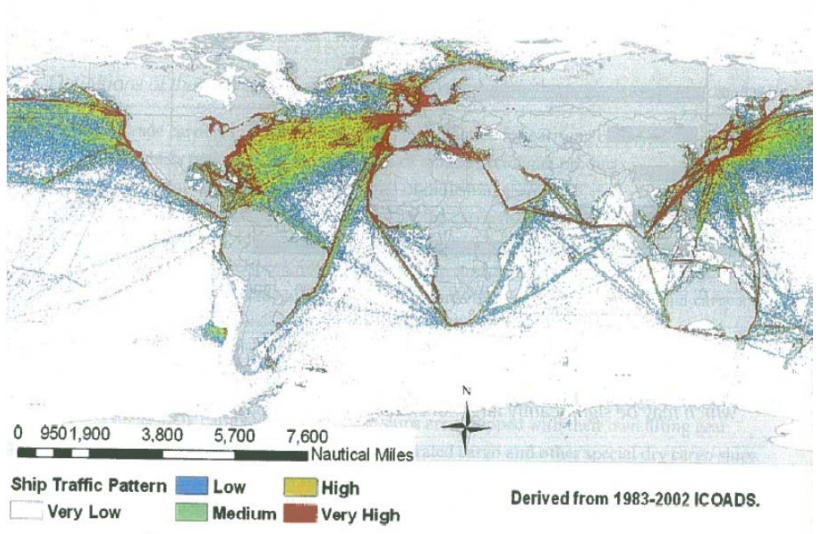
LNG as a Fuel: Regulation & Key Drivers

- Emissions Regulations
  - Nonattainment
  - IMO Annex VI
  - North American ECA
- Economics
  - Oil price uncertainty
  - Low sulfur fuel availability
  - Abundance of shale gas

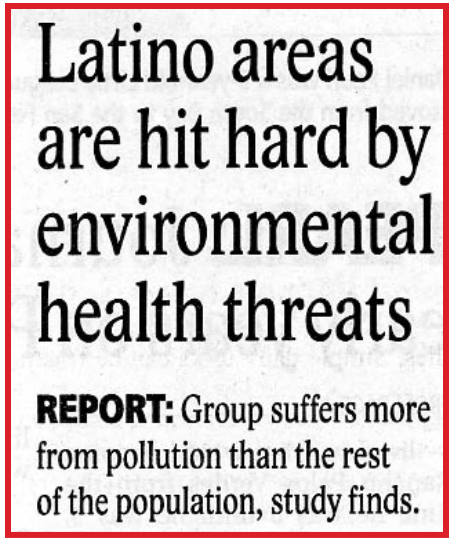





The North America Emissions Control (NA ECA)
Area Zones: 200 nm
✓ 1.0% sulfur 2012
✓ 0.1% sulfur 2015
Caribbean Emission Control Area (2014)

Regional Drivers

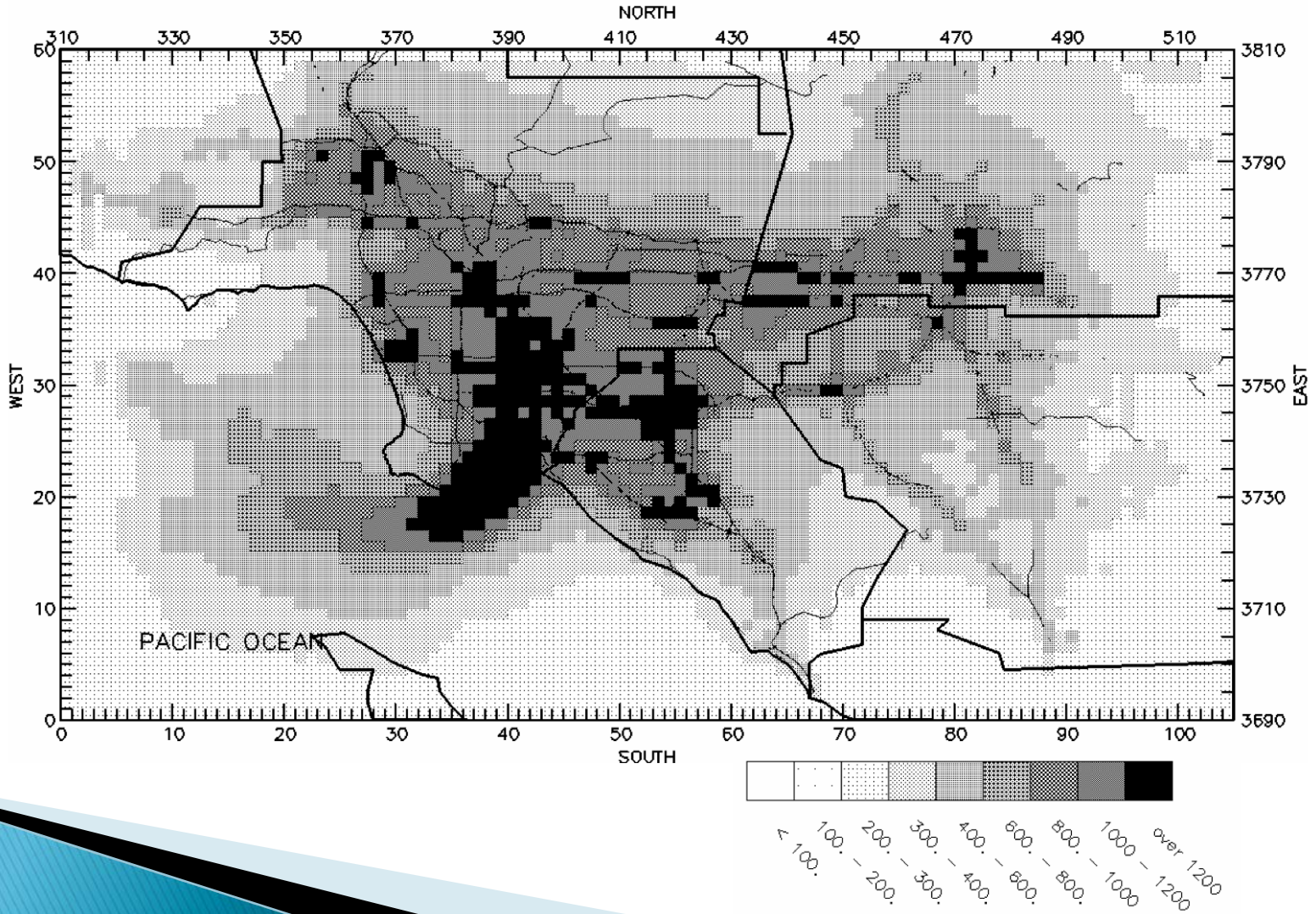
- Ozone & PM nonattainment area
- Diesel Particulate Matter (DPM) Identified as Air Toxic by California Air Resources Board
- SCAQMD's MATES Studies
- CARB DPM Exposure Assessment POLA & POLB
- Health risks to surrounding communities


Latino areas are hit hard by environmental health threats

REPORT: Group suffers more from pollution than the rest of the population, study finds.

Regional Drivers

MATES II Modeled 2000 Air Toxics Risk



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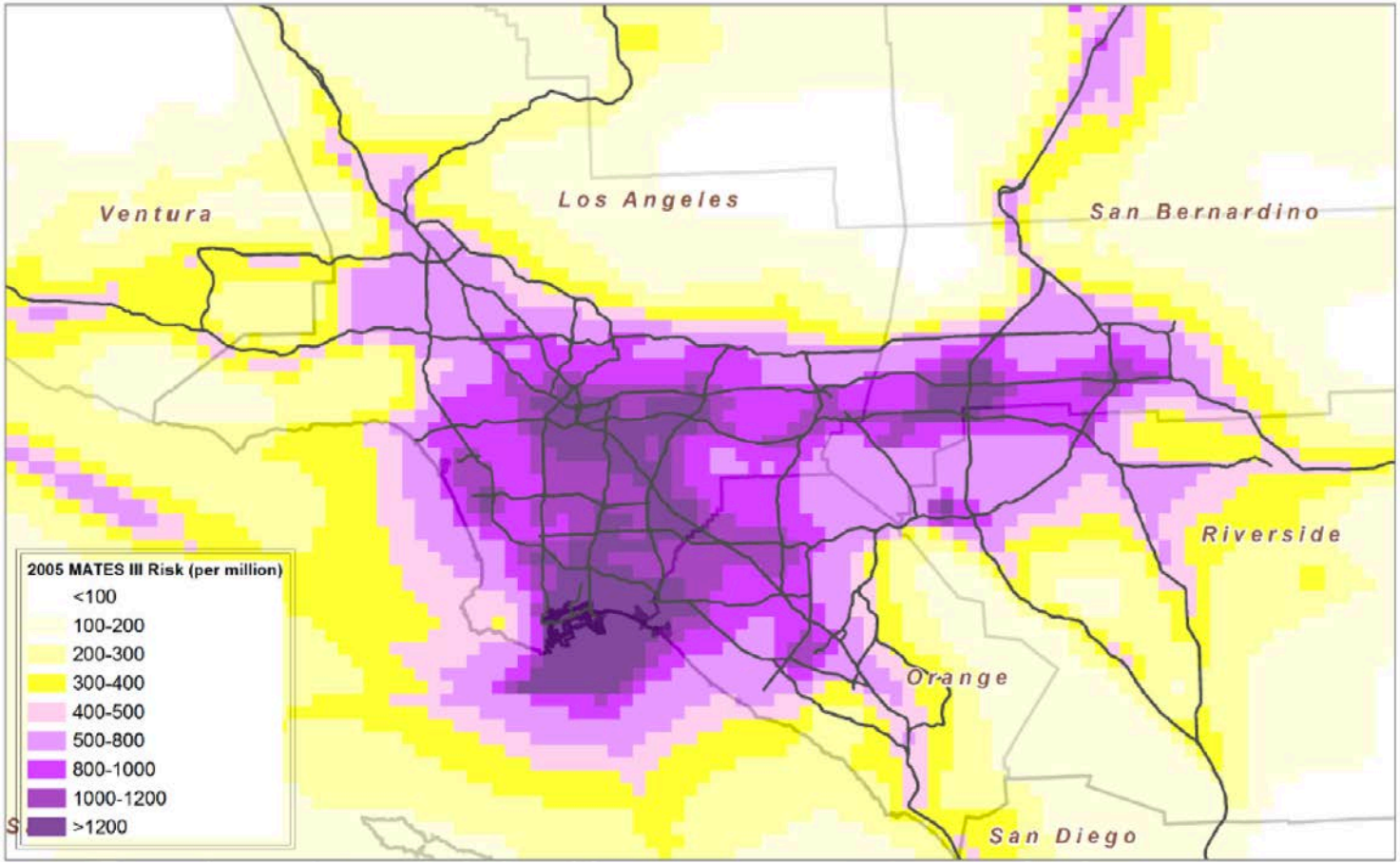
Regional Drivers

MATES III Modeled 2005 Air Toxics Risk



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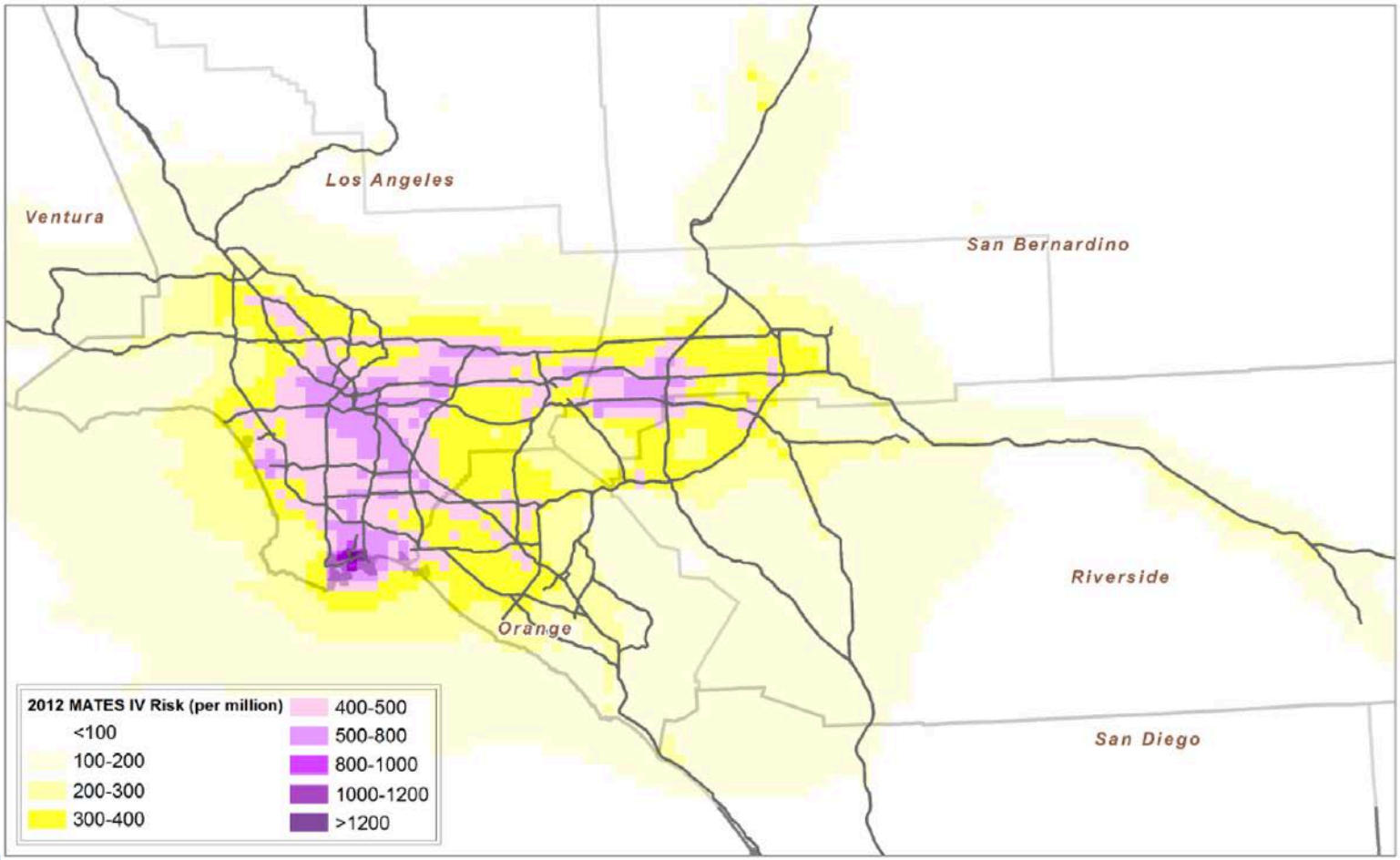
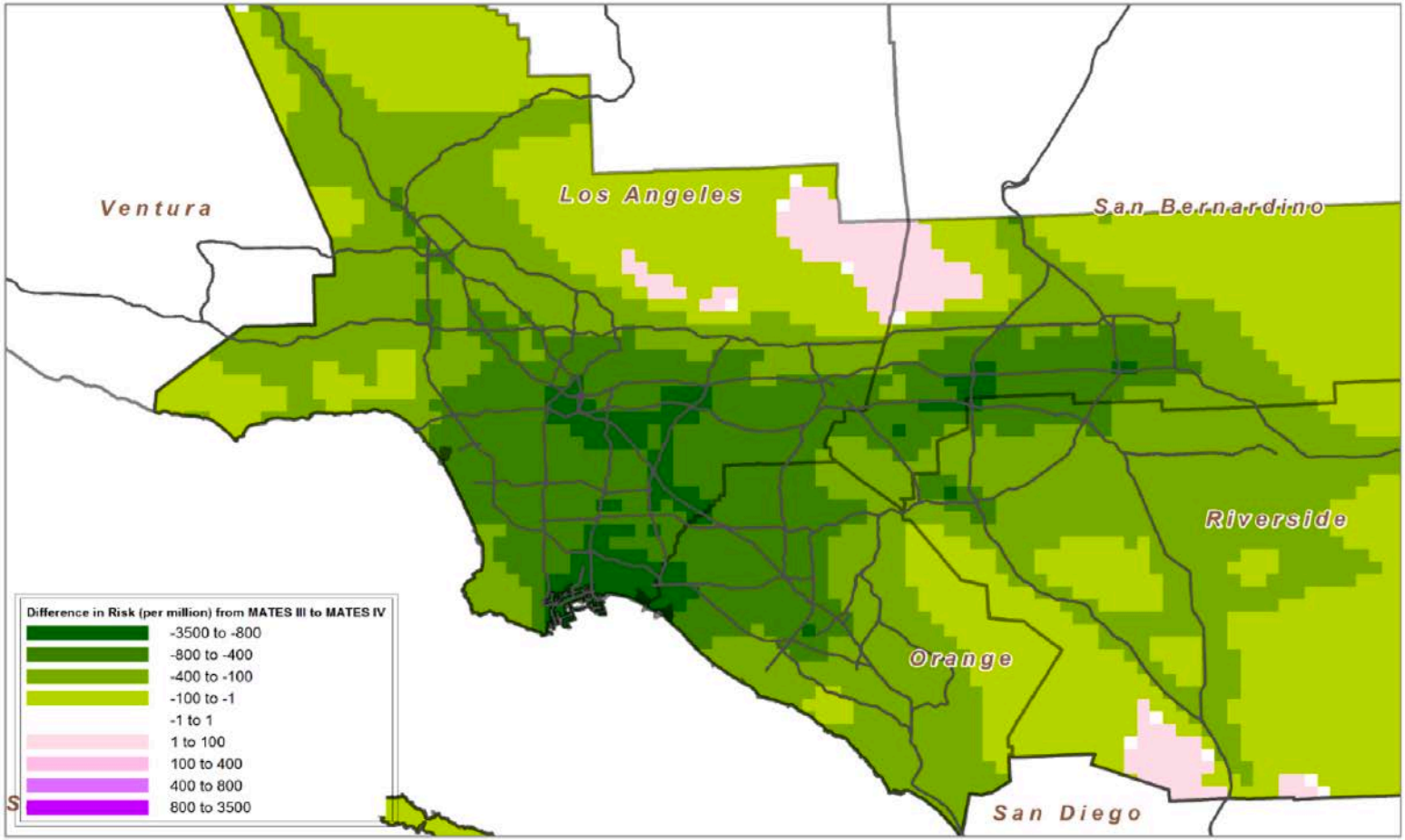
Regional Drivers

MATES IV Modeled 2012 Air Toxics Risk



Regional Drivers

Changes in Modeled Risk 2005 – 2012



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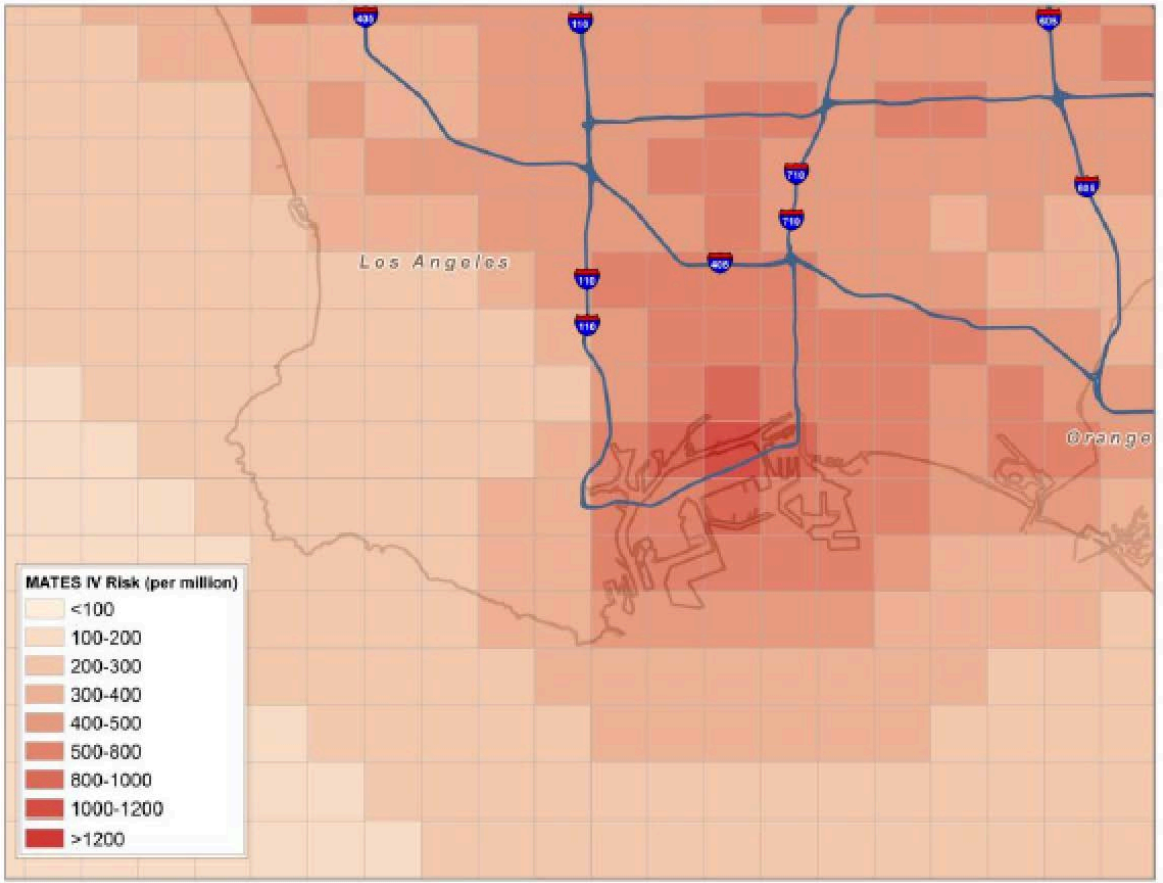
Regional Drivers

MATES IV Port Area Population-Weighted Modeled Cancer Risk



CAAP Overview

- First comprehensive port emission reduction plan
- Focuses on DPM, NOx, SOx & health risk reductions
- Coordinated with regulatory agencies & stakeholders
- Sets future emission & health risk reduction goals
- Consists of a series of source category measures
- Progress is tracked through activity-based annual inventories

CAAP Standards

SAN PEDRO BAY STANDARDS

- The San Pedro Bay Standards establish the long-term emissions-reduction and health risk-reduction goals for the ports of Los Angeles and Long Beach.
- Emission Reduction Standard for DPM, NOx, and SOx have target years of 2014 and 2023 to support state ambient air quality goals.
- Health Risk Reduction Standard has a target year of 2020 to align with CARB's Goods Movement Emission Reduction Plan.

Clean Air Action Plan (CAAP) Goals *(% reduction compared to 2005)*	**2014**	**2023**
DPM	72%	77%
NOx	22%	59%
SOx	93%	93%

Health Risk Reduction Standard *(% reduction in residential cancer risk compared to 2005)*	**2020**	**85%**

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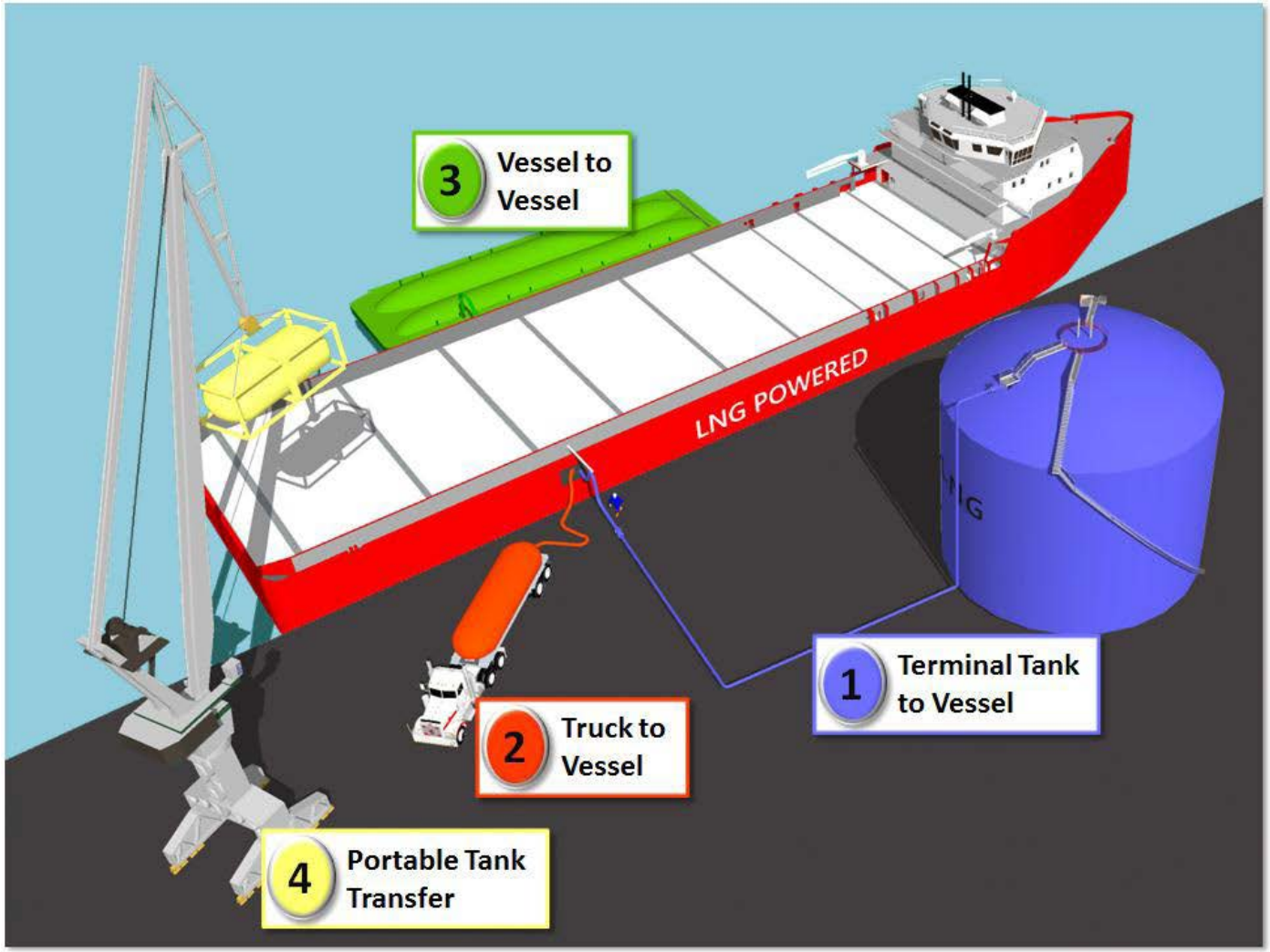
Infrastructure – Regional

Infrastructure – Port

- Bunkering options being evaluated
- Standards being developed
- Truck delivery only option at this time
- LNG liquefaction facility project for POLB had strong opposition from public

Bunkering Scenarios



Source: American Bureau of Shipping, 2014

LNG Guidance

- United States Coast Guard
- International Association of Ports and Harbors/World Ports Climate Initiative
- SIGTTO LNG Fuel Advisory Group
- Intertanko
- International Council of Combustion Engines
- Society for Gas as a Marine Fuel
- LNG as Fuel Advisory Council

Demand for LNG in San Pedro Bay

- LNG Truck Fleet
- LNG Ocean Going Vessels

Port Incentives

- Environmental Ship Index
- Green Ship Award
- Technology Advancement Program

LNG Trucks

- Current Fleet = 900 Natural Gas trucks
  - 888 liquefied natural gas
  - 12 compressed natural gas
- 2008 Legacy Fleet LNG Trucks
  - Grant Funded POLA and POLB ($184,000/truck)
  - 108 trucks
  - 11.9 liters
  - Diesel conversion
  - Heat issues

LNG Trucks (Continued)

- Remaining approximate 800 LNG Trucks funded by:
  - California Prop 1B Funds
  - AQMD/POLA/POLB comingled funds
- 2nd Generation LNG Trucks
  - 8.9 Liter trucks (OEM LNG purpose built)
  - Heat issues resolved
- On-Port Fueling Facility
  - POLA and POLB assisted with siting a station on Port property
  - POLB offered a reduced property rate on 5 year lease

LNG Trucks (Continued)

- The fleet of LNG Trucks has not grown
- Cost of a new clean diesel truck = $120,000
- Cost of a new LNG truck = $160,000
- The LNG trucks have been shown to work best on short haul trips (within 20 miles of the port)
- The LNG trucks provide approximately 7% of all drayage services at the Ports

Thank you

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